

# AGRI-FACTS

Practical Information for Alberta's Agriculture Industry

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Agdex 100/32-1

## Irrigated Crop Recommendations

This publication provides general information on crop types for production under irrigation. Recommended varieties are listed for each crop, along with seeding rates and general fertilizer recommendations. With this information, producers can determine the variety and seeding rate for each irrigated crop.

### Fertilizer recommendations

General fertilizer recommendations are given for both nitrogen (N) and phosphate ( $P_2O_5$ ). The lower value for applied nitrogen should be used when soil test nitrogen is high or when optimum irrigation cannot be maintained. The highest value for applied nitrogen should be used when soil test nitrogen is low. For greatest nitrogen efficiency, nitrogen fertilizer can be banded rather than broadcast and incorporated.

When soil test levels of phosphorus are high, only a small starter application of  $P_2O_5$  is required. The higher value for applied phosphorus should be used when soil test phosphorus is low. Phosphorus is most effective for the majority of crops when banded near the seed or drilled in with the seed. Broadcast and incorporated applications should be at least twice the drill-in rates to be equally effective.

Normally, potassium (potash), sulphur and micronutrients are not required by most crops. When soil test levels of potassium (K) are less than 300 lb/ac, an application of potash fertilizer should be considered. When soil test levels of sulphur are less than 10 lb/ac, sulphur fertilizer applications could be considered. Normally, however, there is enough sulphur in irrigation water to meet crop requirements. Approximately 20 lb/ac of sulphur is added to soil with each 30 cm (12 inches) of irrigation water.

Response to micronutrient fertilizers is uncommon for most irrigated crops grown on most soils. The only exception is irrigated field beans, which occasionally will respond to applications of

zinc. Deficiencies occur with dry beans when soils are wet and cold in spring. The micronutrient content of most soils in southern Alberta is sufficient to meet crop requirements.

For more detailed information, refer to the following Alberta Agriculture factsheets:

- *Fertilizing Irrigated Grain and Oilseed Crops*, Agdex 100/541-1
- *Alberta Fertilizer Guide*, Agdex 541-1
- *Phosphorus Fertilizer Application in Crop Production*, Agdex 542-3
- *Potassium Fertilizer Application in Crop Production*, Agdex 542-9
- *Micronutrient Requirements of Crops in Alberta*, Agdex 531-1
- *Fertilizer Requirements of Irrigated Alfalfa*, Agdex 561-18
- *Dry Bean Nutrient Requirements in Southern Alberta*, Agdex 142/532-1

*Producers can determine the variety and seeding rate for each irrigated crop*

### Disease and insect seed treatment

Flax seed should be treated to control seedling blight. Canola seed should be treated to control flea beetles, seedling blight and the seed borne phase of blackleg. Cereal smuts can be controlled and root diseases suppressed with seed treatment fungicides. Corn should be treated to control seedling blight, root disease and wireworms.

Pea, bean, canola and sunflower crops grown under irrigation are highly susceptible to sclerotinia white mold. Proper water management, crop rotations and the use of appropriate fungicides will result in higher yields.

All wheat types are susceptible to Fusarium head blight, with high risk for continuous wheat or wheat after corn.

Recommended control strategies include foliar fungicides and restricted irrigation during anthesis (flowering).

# Good seed

Costs of crop production are becoming extremely high: land use, machinery, fertilizers, chemicals and labor, so the cost of good quality seed is a most important production factor.

The only way to be absolutely sure of obtaining a particular variety is by the use of pedigreed seed. The certificate of analysis of each seed lot will indicate details of purity relative to other crop kinds and weed seeds.

## Determination of seeding rates

Approximate seeding rates for grain, pulse and forage crops are provided in the following tables. After the crop variety is selected and a target seeding rate is determined, the seeding rate in pounds per acre must be determined.

This can be done using the seeding rate calculators available on-line on Alberta Agriculture's website.

The calculators are available at:

- Cereal crops: <http://www.agric.gov.ab.ca/app19/loadSeedRateCalc>
- Pulse crops: <http://www.agric.gov.ab.ca/app19/calc/crop/otherseedcalculator.jsp>
- Forage crops: <http://www.agric.gov.ab.ca/app19/calc/forageseed/forageseedintro.jsp>

Specific crop recommendations include:

- Cereals – Table 1
- Oilseeds – Table 2
- Special crops – Table 3
- Forages – Table 4
- Pulses – Table 5

**Table 1. Cereals**

Crop	Type	Yield potential	Varieties	Seeding rates	General fertilizer recommendations <sup>1</sup>		Approximate growing season water use <sup>4</sup>	
					N (lb/ac)	P (lb of P <sub>2</sub> O <sub>5</sub> /ac)	in	mm
<b>Wheat</b>	Spring	100 bu/ac	AC Barrie, 5602 HR, Superb, CDC Go, Prodigy, Somerset, CDC Abound, CDC Alsask, CDC Osler, Harvest, Journey	105 - 130 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 140	20 - 50	18	460
	Durum	110 bu/ac	AC Morse, AC Navigator, Commander	120 - 150 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 140	20 - 50	18	460
	Soft	140 bu/ac	AC Andrew, AC Meena, Bishaj, Sadash	110 - 160 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 140	20 - 50	19	480
	Winter	120 bu/ac	AC Tempest, McClintock, Radiant	105 - 130 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 120	20 - 50 (fall applied)	15	380
	Prairie spring	120 bu/ac	AC Crystal, 5701PR, Snowwhite 476	120 - 145 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 140	20 - 50	19	480
<b>Barley</b>	Malt		AC Metcalfe, CDC Copeland	90 - 130 lb/ac (18 - 25 seed/ft <sup>2</sup> )	35 - 110	35 - 50	18	430 - 460
	Feed		Xena, CDC Bold, Vivar, Kasota, Mahigan	140 - 170 lb/ac (30 seed/ft <sup>2</sup> )	45 - 130	20 - 50	18	460
	Silage	12 - 15 T/ac (wet basis)	Xena, CDC Bold, Vivar, Kasota, Mahigan	140 - 190 lb/ac (30 - 35 seed/ft <sup>2</sup> )	50 - 130	20 - 50	17	430
<b>Oats</b>	Grain	130 - 140 bu/ac	AC Mustang, Cascade	120 - 130 lb/ac	50 - 130	20 - 50	17	430
	Silage	12 - 15 T/ac (wet basis)	AC Mustang, Cascade	120 - 130 lb/ac (25 - 30 seed/ft <sup>2</sup> )	50 - 130	20 - 50	16	410
<b>Spring triticale</b>	Grain or silage	120 bu/ac or 12 - 15 T/ac	Pronghorn, AC Alta, AC Ultima	160 - 190 lb/ac (35 seed/ft <sup>2</sup> )	50 - 140	20 - 50	18 - 19	460 - 480
<b>Winter triticale</b>	Silage	100 - 120 lb/ac	Bobcat	160 - 190 lb/ac (35 seed/ft <sup>2</sup> )	50 - 120	20 - 50	15	380
<b>Cereals for pasture</b>	Barley	2.5 AUM/ac	Tukwa	100 lb/ac	35 - 80	20 - 50	15	380

Please refer to page 5 for footnotes.

Table 2. Oilseeds								
Crop	Type	Yield potential	Varieties	Seeding rates	General fertilizer recommendations <sup>1</sup>		Approximate growing season water use <sup>4</sup>	
					N (lb/ac)	P (lb of P <sub>2</sub> O <sub>5</sub> /ac)	in	mm
Canola	Argentine	65 - 80 bu/ac	Refer to most recent <i>Varieties of Cereals and Oilseed Crops for Alberta</i> , Agdex 100/32	6 - 9 lb/ac	35 - 140	20 - 50	19	480
Flax		50 - 65 bu/ac	Flanders, CDC Bethune, CDC Sorrel, Prairie Thunder	30 - 40 lb/ac	20 - 100	15 - 40	16	410
Safflower <sup>3</sup>	Birdseed	2,500 lb/ac	Saffire	30 - 50 lb/ac	35 - 90	25 - 50	17	430
	Birdseed/oil	2,800 lb/ac	AC Stirling, AC Sunset					
Mustard	Yellow	3,000 - 3,600 lb/ac	AC Pennant, AC Base, Andante	10 - 12 lb/ac	35 - 110	20 - 50	18 - 19	460 - 480
	Brown	3,000 - 3,600 lb/ac	Common Brown, Duchess	7 - 10 lb/ac	35 - 110	20 - 50	18 - 19	460 - 480
	Oriental	3,000 - 3,600 lb/ac	Cutlass, Forge, Ac Vulcan	7 - 10 lb/ac	35 - 110	20 - 50	18 - 19	460 - 480

Table 3. Special crops								
Crop	Type	Yield potential	Varieties	Seeding rates	General fertilizer recommendations <sup>1</sup>		Approximate growing season water use <sup>4</sup>	
					N (lb/ac)	P (lb of P <sub>2</sub> O <sub>5</sub> /ac)	in	mm
Potatoes	French fry	18 - 22 T/ac	Use varieties recommended by contracting companies	Follow contracting company recommendations	120 - 200	75 - 150	22	560
	Chipping	15 T/ac	Use varieties recommended by contracting companies	Follow contracting company recommendations				
	Table	18 T/ac	Use varieties recommended by contracting company	Seed pieces 2 oz. 36 in. spacing between rows, 6 - 12 in. within rows – use within row spacing recommended by contracting company				
Sugar beets		25 T/ac	Use varieties supplied by contracting company – order seed early	1.1 lb/ac; 6 inches between plants; 22 inches between rows	80 - 140	30 - 65	22	560
Corn	Silage	18 - 23 T/ac (wet basis)	See Corn Committee Recommendations at: <a href="http://www.albertacorn.com">www.albertacorn.com</a>	30,000 - 33,000 plants/ac	80 - 200	45 - 60	20	510
	Grain	120 bu/ac	See Corn Committee Recommendations at: <a href="http://www.albertacorn.com">www.albertacorn.com</a>	23,000 - 25,000 plants/ac				

Please refer to page 5 for footnotes.

**Table 4. Forages**

Crop	Type	Yield potential	Varieties	Seeding rates	General fertilizer recommendations <sup>1</sup>		Crop water recommendations <sup>4</sup>	
					N (lb/ac)	P (lb of P <sub>2</sub> O <sub>5</sub> /ac)	in	mm
<b>Smooth brome grass</b>		4 - 6 T/ac	Carlton, AC Rocket, Radisson, Bravo	Refer to <i>Varieties of Hay and Pasture Crops for Alberta 2008</i> , Agdex 120/32	For pasture up to 200 lb/ac in 4 - 5 split applications	30 - 40 lb/ac spring broadcast	22 - 24	560 - 610
<b>Meadow brome grass</b>		4 - 6 T/ac	Fleet, Montana, Paddock		For hay 100 lb/ac in spring, 80 after each cut			
<b>Orchard grass</b>		4 - 6 T/ac	Kay, Arctic					
<b>Timothy</b>		4 - 5 T/ac	Climax, Express, Champ, Climax, Colt, Grinstad, Hokuo, Richmond					
<b>Reed canarygrass</b>		4 - 6 T/ac	Rival, Venture, Palaton, Bellevue					
<b>Pubescent wheatgrass</b>		4 - 6 T/ac	Greenleaf, Chief, Clarke					
<b>Grass and legume</b>	All grass types	4 - 6 T/ac	With 20 to 40% legume	Refer to <i>Varieties of Hay and Pasture Crops for Alberta 2008</i> , Agdex 120/32	30 - 60			
	All grass types	4 - 7 T/ac	With 40 to 60% legume	Refer to <i>Varieties of Hay and Pasture Crops for Alberta 2008</i> , Agdex 120/32	10 - 35			30 - 60
<b>Canary seed</b>		2,400 lb/ac	Keet, Elias	27 - 40 lb/ac	30 - 80	20 - 50	18	460
<b>Sainfoin</b>		3 - 4 T/ac	Nova	35 lb/ac	0 - 30 inoculate with F inoculate (Nitagin Co.)	50 annually or 100 - 150 when establishing stand	20	510
<b>Alfalfa</b>	Forage		Refer to most recent <i>Varieties of Hay and Pasture Crops for Alberta 2008</i> , Agdex 120/32	10 - 12 lb/ac	No N fertilizer required. Inoculate with Rhizobium meltoti <sup>2</sup>	50 annually or 100 - 150 when establishing stand	26	680
	Seed		Use varieties where market demand is high	2 - 4 lb/ac	0 - 30 and inoculate with Rhizobia meltoti <sup>2</sup>	30 - 50 annually or 100 - 150 when establishing stand	20	510

Please refer to page 5 for footnotes.

**Table 5. Pulses**

Crop	Type	Yield potential	Varieties	Seeding rates	General fertilizer recommendations <sup>1</sup>		Approximate growing season water use <sup>4</sup>	
					N (lb/ac)	P (lb of P <sub>2</sub> O <sub>5</sub> /ac)	in	mm
<b>Fababean</b>		3,500 - 5,000 lb/ac	Snowbird (low tannin)	175 - 220 lb/ac	0 - 40 and inoculate with Rhizobia leguminosarum <sup>2</sup> Q culture	30 - 60	22	(560)
<b>Dry beans</b>	Pinto	2,400 - 2,700 lb/ac	Othello, AC Agrinto, AC Island, CDC Minto	60 - 110 lb/ac	Refer to <i>Dry Bean Nutrient Requirements in Southern Alberta</i> , Agdex 142/532-1	30 - 40 lb of P <sub>2</sub> O <sub>5</sub> /ac zinc application may be necessary when soil test is low or P <sub>2</sub> O <sub>5</sub> application is high	15	(380)
	Small red		AC Redbond					
	Pink		Viva, AC Early Rose					
	Great Northern		AC Resolute					
	Black		AC Diamond					
	Navy		AC Skipper					
<b>Pea</b>	Field (dry)	3,500 - 4,000 lb/ac	Yellow: Reward, Eclipse, SW Marquee, CDC Bronco, Cultass, Caneval Green: SW Parade, Cooper	135 - 200 lb/ac (9 seeds/ft)	For all types 0 - 20 lb N/ac and proper seed inoculation with Rhizobia leguminosarum <sup>2</sup>	25 - 40 for all types	16	410
	Processing pea	2 - 3 T/ac	Varieties supplied by contracting company	12 seeds/ft <sup>2</sup>				

<sup>1</sup> Fertilizer recommendations are general. Soil testing is necessary to determine exact fertilizer requirements.

<sup>2</sup> Fertilizer application rates are based on inoculation with specific rhizobia bacteria to obtain nitrogen fixation. An appropriate sticker should be used to obtain proper seed/inoculant contact. Soils with residual N levels exceeding 40 - 50 lb/ac may not respond to inoculation.

<sup>3</sup> These crops can be adversely affected by intensive irrigation. Overwatering of these crops can lead to increased disease pressure and delayed maturity.

<sup>4</sup> Irrigation requirement = crop water requirement - (Growing season precipitation and available soil moisture).

NOTE: To simplify information, trade names of some products have been used. No endorsement of these products is intended nor is any criticism implied of similar products that are not mentioned.

### For more detailed information, see the following factsheets:

*Varieties of Cereal and Oilseed Crops for Alberta*

[http://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/All/agdex4069](http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/All/agdex4069)

*Varieties of Perennial Hay and Pasture Crops for Alberta 2008*

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex105](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex105)

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